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| 10/756,088 | 01/13/2004 | Ashley Carl Torr | 1-16438 | 3080 |

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| EXAMINER |
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LAZORCIK, JASON L

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| ART UNIT | PAPER NUMBER |
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1731

DATE MAILED: 07/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/756,088

Applicant(s)

TORR ET AL.

Examiner

Jason L. Lazorcik

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 30-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 30-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>03/22/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 30 through 39 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Specifically, the reference to “operating at a quench pressure” fails to establish a sufficient relationship between the glass material and the method of processing steps to be considered enabling for one of ordinary skill. Similarly, the reference to “quench pressure” without supporting structural details of the tempering equipment fails to permit one of ordinary skill to make or use the invention without undue experimentation.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 30 through 39 rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: the quench

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pressure in an apparatus and specifically as manifest in the immediate method of tempering a glazing.

Claims 30 through 39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term "the required standards" in claims 30, 31, 38, and 39 is a relative term which renders the claim indefinite. The term "the required standards" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Specifically, it is noted on page 9, Lines 4 and 5 that "the required tempering standards ***vary from country to country***" and as such one of ordinary skill would not necessarily be apprised of the particular metes and bounds for which the applicant seeks patent protection.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 40-44 are rejected under 35 U.S.C. 102(b) as being anticipated by Cheng (WO 91/07356).

Regarding Claims 40 and 41, Cheng relates a composition of soda-lime silica glass comprising:

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1. From about 65 to about 75 weight percent SiO_2
2. From about 10 to about 15 weight percent Na_2O
3. From about 0 to 4 weight percent K_2O
4. From about 1 to 5 weight percent MgO
5. From about 5 to 15 weight percent CaO
6. From about 0 to about 3 weight percent Al_2O_3
7. "A total amount of Iron in the batch ...equal from 0.7% to about 1.25% by weight, expressed as Fe_2O_3 ... the degree of reduction is critical and must equal between 23 and 29%." (pg 11, Lines 9 to 13)
8. From about 0.02 to 0.85 weight percent TiO_2

Both of the above claims are anticipated wherein the total weight percent of alkali metal oxide is understood to be approximately 10 to 19% ($\text{Na}_2\text{O} + \text{K}_2\text{O}$) and the total weight percent of alkaline earth metal oxide (Other than MgO) is understood to be 5 to 15 % based on the concentration of CaO .

Claim 42 is anticipated by the rejection of Claims 40 and 41 above wherein the ratio of ferrous iron to total iron is between 23 and 29% or less than 30% as claimed.

Regarding Claim 43, Cheng indicates that "the glass sheets for windshield use are of a thickness in the range of from about 1.7 to about 2.5mm" (Pg 6, Lines 11-15) which reads on the immediate claim as a glass having a thickness less than 2.8 mm.

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Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 30 through 39 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheng (WO 91/07356) in view of Littleton (2,311,846). Cheng relates a composition of soda-lime silica glass comprising:

9. From about 65 to about 75 weight percent SiO_2
10. From about 10 to about 15 weight percent Na_2O
11. From about 0 to 4 weight percent K_2O
12. From about 1 to 5 weight percent MgO
13. From about 5 to 15 weight percent CaO
14. From about 0 to about 3 weight percent Al_2O_3

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15. "A total amount of Iron in the batch ...equal from 0.7% to about 1.25% by weight, expressed as Fe_2O_3 ... the degree of reduction is critical and must equal between 23 and 29%." (pg 11, Lines 9 to 13)

16. From about 0.02 to 0.85 weight percent TiO_2

The family of glass compositions with constituent ingredients as set forth above, overlapping a composition (Composition I) as set forth in the applicants specification (pg 7, lines 20-31), is understood to define at least one soda-lime silica glass composition which inherently possess all of the physical properties of applicants said Composition I as set forth in the specification (Pg 8, lines 1-4). As such, it would be obvious to fabricate at least one silica glass composition according to the Cheng compositional ratios which possess a thermal expansion coefficient, α , of $98.9 \times 10^{-7} \text{ }^\circ\text{C}^{-1}$ and a fracture toughness of $0.66 \text{ MPam}^{1/2}$. Applicant also defines a benchmark standard for comparison or the "standard composition" of glass referred to as OPTIKOOL™ 371 having a thermal expansion coefficient, α , of 92.4×10^{-7} . Applicant further indicates that a sample according to Composition 1 requires 8 kPa of cooling pressure to achieve ECE R43 standards versus the "standard composition" requirement of 17 kPa or higher (pg 14, Lines 1-14).

Cheng fails to explicitly indicate that the disclosed glass would require a given quenching pressure during a tempering process or that the given quenching pressure would be 20% less than that required for a "standard composition". However according to the applicants disclosure (pg 14, Lines 1-14), the Composition 1 outlined above requires approximately 47% (8kPa/ 17kPa) of the required quenching pressure to

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achieve the “required standards” when compared to the “standard composition”. It is therefore understood that Cheng’s composition, inherently having the same physical properties of the applicants glass, would likewise inherently require 20% less quench pressure than is required by the “standard composition” to achieve a temper in accord with the “required standards”

Having indicated that the Cheng glass would inherently require a quench pressure 20% less than the “standard composition”, the Littleton disclosure lays open the governing relationship between the properties of a glass composition and the chilling conditions or quenching conditions required to achieve a given degree of temper. Littleton indicates that,

“the degree of temper obtained under specific chilling conditions is controlled primarily by the thermal expansion coefficient of the glass from which an article is made although the thermal conductivity, the thickness of the glass, and its shape are also factors of somewhat lesser importance. **The higher the expansion coefficient of the glass, the greater will be the degree of temper of the article** and the lower the expansion coefficient, the lesser will be the degree of temper for a like treatment.”

The “quench pressure” is understood to be one of the family of “operating” variables which govern a tempering process and said family of variables is understood to constitute a set of “specific chilling conditions” taught by Littleton. Littleton’s disclosure clearly indicates that for one of ordinary skill in the art seeking to minimize the cooling

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conditions required to achieve a degree of temper in glass, it would be obvious to adjust the composition of said glass according to the teachings of Cheng in order to increase the thermal expansion coefficient of said glass.

Regarding Claim 31, the above rejection of Claim 30 indicates that the Cheng glass composition would require approximately 47% of the quench pressure of the "standard composition" which is read as at least 25% less than the quench pressure required to temper a corresponding glazing of standard composition.

With respect to Claim 32, Cheng indicates (Pg 5, Lines 17-18) that the disclosed glass may be utilized for "a nominal glass thickness of 3 to 5mm" and that "the glass sheets for windshield use are of a thickness in the range of from about 1.7 to about 2.5mm" (Pg 6, Lines 11-15). Cheng further indicates that the glass sheets of the disclosed invention may be made via a float glass process (Pg 8, Lines 27-28).

Claim 33 is rendered obvious in light of the rejection of Claim 30 above where the quench pressure for the Cheng glass would inherently be 8 kPa or "not more than 12.5 kPa" for approximately 3 mm glass.

Claim 34 is rendered obvious in light of the rejection of Claim 30 above where the quench pressure for the Cheng glass would inherently be 8 kPa or "not more than 10 kPa" for approximately 3 mm glass.

Claim 35 is rendered obvious in light of the rejection of Claim 30 above where the Cheng glass was shown to inherently possess a thermal expansion greater than $93 \times 10^{-7} \text{ }^{\circ}\text{C}^{-1}$ and a Fracture toughness of less than $0.72 \text{ MPa}\sqrt{\text{m}}$ and the quench pressure

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required for the Cheng glass would inherently be 8 kPa or “not more than 10 kPa” for approximately 3 mm glass.

Regarding Claims 36 and 37 and with particular reference to the disclosure of Littleton in the Claim 30 rejection above, Littleton asserts

“The degree of temper obtained under specific chilling conditions is controlled primarily by the thermal expansion coefficient of the glass from which an article is made although the thermal conductivity, the thickness of the glass, and its shape are also factors of somewhat lesser importance.”

In light of the argument set forth in the Claim 30 rejection above, the thickness of the glass sheet will dictate the degree of temper obtained for a given set of chilling conditions or a given “quench pressure”. Given the relationship between thickness and resultant temper, it would be obvious to one of ordinary skill in the art to optimize the quench pressure through routine experimentation while holding all other variables constant in order to optimize the resultant temper in the sheet of glass.

Claim 38 is rejected as being obvious in light of the relevant portions of the rejection of Claim 30 above and the following. Specifically, the rejection of Claim 30 above sets forth a glass composition comprising at least 14.5% by weight Na₂O, at least 10.5% by weight CaO, at least 0.5% by weight total iron and being “substantially” magnesium free where 1-5% MgO is understood as being 95% to 99% magnesium free or “substantially magnesium free”. Also as indicated in the rejection of Claim 30, it would be obvious to operate the tempering procedure at a quench pressure at least

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10% less than the quench pressure of a glass sheet of "standard composition".

Regarding the instant claim, Cheng does not explicitly indicate that the degree of reduction of the iron or "ferrous value (% ferrous) (should be) of at least 30%".

However, the immediate reference does indicate that more highly reduced iron (eg above 29%) would cause the visible light transmittance to drop below 70% (pg11, Lines 18-20). It would therefore be obvious to one of ordinary skill in the art seeking to produce "tinted" windows with a light transmittance below 70% in the process as set forth by Cheng to increase the relative percentage of reduced iron in the glass melt to above 30% as discussed.

Claim 30 is rejected as being obvious in light of the arguments set forth in the rejections of Claim 30 and Claim 38 as presented above.

Claim 40 is obvious in light of the rejection of claim 30 above wherein the total weigh percent of alkali metal oxide is understood to be approximately 10 to 19% (Na_2O + K_2O) and the total weight percent of alkaline earth metal oxide oxide (Other than MgO) is understood to be 5 to 15 % based on the concentration of CaO .

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason L. Lazorcik whose telephone number is (571) 272-2217. The examiner can normally be reached on Monday through Friday 8:30 am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JLL


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